tration, activity and content volume, in accordance with an aspect of the present invention. FIG. **10** shows a communication system **1000** usable in accordance with the present invention. The communication system **1000** includes one or more accessors **1060**, **1062** (also referred to interchangeably herein as one or more "users") and one or more terminals **1042**, **1066**. In one aspect, data for use in accordance with the present invention is, for example, input and/or accessed by accessors **1060**, **1064** via terminals **1042**, **1066**, such as personal computers (PCs), minicomputers, mainframe computers, microcomputers, telephonic devices, or wireless devices, such as personal digital assistants ("PDAs") or a hand-held wireless devices coupled to a server **1043**, such as a PC, minicomputer, mainframe computer, microcomputer, or other device having a processor and a repository for data and/or connection to a repository for data, via, for example, a network **1044**, such as the Internet or an intranet, and couplings **1045**, **1046**, **1064**. The couplings **1045**, **1046**, **1064** include, for example, wired, wireless, or fiber optic links. In another aspect, the method and system of the present invention operate in a stand-alone environment, such as on a single terminal.

The previous description is provided to enable any person skilled in the art to fully understand the full scope of the disclosure. Modifications to the various configurations disclosed herein will be readily apparent to those skilled in the art. Thus, the claims are not intended to be limited to the various aspects of the disclosure described herein, but is to be accorded the full scope consistent with the language of claims, wherein reference to an element in the singular is not intended to mean "one and only one" unless specifically so stated, but rather "one or more." Unless specifically stated otherwise, the term "some" refers to one or more. A claim that recites at least one of a combination of elements (e.g., "at least one of A, B, or C") refers to one or more of the recited elements (e.g., A, or B, or C, or any combination thereof). All structural and functional equivalents to the elements of the various aspects described throughout this disclosure that are known or later come to be known to those of ordinary skill in the art are expressly incorporated herein by reference and are intended to be encompassed by the claims. Moreover, nothing disclosed herein is intended to be dedicated to the public regardless of whether such disclosure is explicitly recited in the claims. No claim element is to be construed under the provisions of 35 U.S.C. §112, sixth paragraph, unless the element is expressly recited using the phrase "means for" or, in the case of a method claim, the element is recited using the phrase "step for."

While aspects of this invention have been described in conjunction with the example features outlined above, various alternatives, modifications, variations, improvements, and/or substantial equivalents, whether known or that are or may be presently unforeseen, may become apparent to those having at least ordinary skill in the art. Accordingly, the example aspects of the invention, as set forth above, are intended to be illustrative, not limiting. Various changes may be made without departing from the spirit and thereof. Therefore, aspects of the invention are intended to embrace all known or later-developed alternatives, modifications, variations, improvements, and/or substantial equivalents.

What is claimed is:

1. An apparatus for detecting radioactivity of a sample in a container of known dimensions comprising:

a first gamma ray detector arranged below a lower surface of the container with respect to gravity; and

a second gamma ray detector arranged above an upper surface of the container with respect to gravity, opposite the first gamma ray detector;

wherein each of the first gamma ray detector and the second gamma ray detector have enhanced sensitivity along their respective longitudinal axes;

wherein each of the first gamma ray detector and the second gamma ray detector detect radioactivity from the sample in the container; and

a processor configured to determine one or more of a volume of the sample and a concentration of a radionuclide in the sample based on at least the volume of the container, the radioactivity detected by the first gamma ray detector and the radioactivity detected by the second gamma ray detector.

2. The apparatus of claim **1**, wherein the first gamma ray detector and the second gamma ray detector comprise cadmium zinc telluride (CZT).

3. The apparatus of claim **1**, wherein:

each of the first gamma ray detector and the second gamma ray detector is elongated along a longitudinal axis;

each of the first gamma ray detector and the second gamma ray detector is enclosed in a shield having an aperture adjacent a longitudinal end of the respective gamma ray detector; and

wherein the first gamma ray detector and the second gamma ray detector are configured to detect gamma rays passing through the respective aperture in a direction substantially parallel to the longitudinal axis.

4. The apparatus of claim **1**, wherein a logarithm of a ratio of the radioactivity detected by the second gamma ray detector to the radioactivity detected by the first gamma ray detector is substantially linear in proportion to a volume of the sample present in the container.

5. The apparatus of claim **1**, wherein the radioactivity detected by the first gamma ray detector is equal to the radioactivity detected by the second gamma ray detector when the container is full.

6. A method of detecting radioactivity of a sample present in a container, comprising:

providing a first gamma ray detector below a lower surface of the container and a second gamma ray detector above an upper surface of the container opposite the first gamma ray detector;

detecting a radioactivity level of the sample present in the container via both the first gamma ray detector and the second gamma ray detector; and

determining one or more of a volume of the sample and a concentration of a radionuclide in the sample based on at least the volume of the container, the radioactivity level detected by the first gamma ray detector and the radioactivity level detected by the second gamma ray detector.

7. The method of claim **6**, wherein the first gamma ray detector and the second gamma ray detector comprise cadmium zinc telluride (CZT).

8. The method of claim **6**, wherein the step of determining one or more of a volume of the sample and a concentration of a radionuclide in the sample uses a logarithm of a ratio of the radioactivity level detected by the second gamma ray detector to the radioactivity level detected by the first gamma ray detector.

9. An apparatus for detecting radioactivity of a sample in a container of known dimensions comprising:

a container;

a first gamma ray detector arranged below a lower surface of the container with respect to gravity; and